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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/660,015

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Walter Schreiber

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3M INNOVATIVE PROPERTIES COMPANY

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EXAMINER

MATTER, KRISTEN CLARETTE

ART UNIT

PAPER NUMBER

3771

NOTIFICATION DATE

DELIVERY MODE

09/18/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/660,015	Applicant(s) SCHREIBER, WALTER	
	Examiner KRISTEN C. MATTER	Art Unit 3771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-23 is/are pending in the application.
- 4a) Of the above claim(s) 24-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

This Action is in response to the amendment filed 6/15/2009. Claims 1 and 22 have been amended, and no claims have been cancelled or added. Currently, claims 1 and 3-23 are pending in the instant application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,3-10, and 16-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Powers US 5,119,833, Smith et al. US Patent No. 6,408,981 B1, and in view of Non-patent literature to Baril, 2004, Cut Smart Engineering & Manufacturing, Inc.

As to claim 1, Powers discloses a method of forming an earplug, comprising: providing a sheet of a compressible, resilient material having a length substantially greater than a thickness (see fig.1, 10; see also col.1, lines 64-68 and col.2, lines 42-46); and forming the sheet to include a thickness substantially equal to a longitudinal length of the earplug (see fig.7, col.2, lines 42-46). Powers lacks positioning the sheet proximate to a water jet assembly. However, Smith teaches that an ear plug can be cut via a variety of conventional cutting devices such a knife blade hot wire, water jet or laser (see col.5, lines 60-65). Powers teaches cutting an earplug

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with a knife-edge saw (see col.2, lines 42-46). Therefore, it would have been obvious to one of ordinary skill in the art to modify Powers in order to cut the ear plug with water jet because Smith teaches such a water jet cutting method is conventionally known in the art. Powers teaches making an orthogonal cut (see fig. 1, 13) to obtain an ear plug shape shown in figures 2-7, thus, Powers as modified by Smith makes the method step of activating the water jet assembly to emit a high pressure water stream; and contacting the sheet with the water stream; cutting the sheet through the thickness in a direction generally orthogonal to the length; maneuvering at least one of the sheet and the high pressure water stream such that the stream traces on the sheet an outer edge of a cross-section of the earplug; delimiting, by said cutting and said maneuvering, at least one side of the earplug which extends generally along the longitudinal length of the earplug; and severing the earplug from the sheet by said cutting and said maneuvering obvious because these steps would have resulted from cutting out a shape of earplug shown in figures 2-7 from a sheet of compressible resilient material as shown in figure 1. Smith is silent on “high pressure”, however the requirement of high-pressure steam is inherent in water jet cutting procedure as taught by Baril. Baril teaches water jet cutting as a processing tool that uses high pressure water for cutting many soft and semi-rigid materials like paper, plastic, and foam (further suggesting process can be applied for making earplug, which are conventionally made from resilient foam material). Baril further teaches high-pressure water (50,000-60,000 psi) passes through a jeweled orifice that ranges from 0.003 to 0.013 inches and the flow enters a mixing tube or nozzle that ranges in size from 0.015 inches through 0.05 inches in diameter. Therefore, it would have been obvious to one of ordinary skill in art to incorporate the specific water-jet cutting steps to the method step of Powers as modified by Smith in order to provide

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extremely accurate cuts with a high degree of repeatability over a wide range of materials and shapes as taught by Baril (see Cut Smart to Baril, paragraph 5).

The modified reference is silent as to maneuvering in substantially circular displacement and traversing circular patterns on the sheet to sever the earplug from the sheet, making the earplug being substantially cylindrical in shape. However, cylindrical earplugs are well known and commonly used in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to traverse circular patterns on the sheet of the modified Powers earplug because it would have provided a means of producing a commonly used cylindrical earplug with a well known and commonly used cutting technique (i.e., water jet assembly), yielding predictable results that do not patentably distinguish an invention over the prior art. Also, a mere change in shape without a change in function does not patentably distinguish the invention over the prior art (See *In re Dailey* 357 F.2d 669, 149 USPQ 47 (CCPA 1966)). Furthermore, it appears as though the modified device of Powers would perform equally well if circular patterns would cut as opposed to rectangular, trapezoidal, etc. patterns.

As to claim 3, Powers as modified teaches wherein said cutting the sheet comprises contacting the sheet with the water stream substantially perpendicular to a top surface thereof.

As to claim 4, the method step of positioning the sheet comprises conveying the sheet using a conveyor belt and depositing the sheet on a salt would have resulted from using the apparatus of Powers as modified by Smith and Baril.

As to claim 5, Powers as modified teaches wherein said activating the water jet assembly comprises a computer controller controlling a pump for generating the high-pressure water stream (see paragraph 2 of Baril).

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As to claim 6, Powers as modified teaches catching the high pressure water stream in a catching tank after said cutting and severing, filtering said water after said catching, and pressurizing said water after said filtering (see paragraph 2 of Baril).

As to claim 7, Powers as modified teaches wherein the high-pressure water stream includes a pressure of approximately 50,000 pounds per square inch (see paragraph 2 of Baril).

As to claim 8, Powers as modified teaches wherein the high-pressure water stream is emitted through an orifice having a diameter of approximately 0.005 to 0.010 inches (see paragraph 2 of Baril).

As to claim 9, Powers as modified teaches wherein said orifice is formed in a ruby or a sapphire or a diamond jewel (Baril further teaches the stream of water causes a vacuum which draws finely crushed garnet (the abrasive) and as the water enters the mixing tube it mixes with the garnet, exiting from the tube at incredible forces making contact with the material to be cut, see paragraph 2 of Baril).

As to claim 10, Powers as modified teaches wherein said cutting comprises forming a kerf in the sheet, the kerf having a width of approximately 0.005 to 0.020 inches (see paragraph 2 of Baril).

As to claim 16, Powers as modified teaches contacting a portion of a surface of the earplug with the high-pressure water stream to ablate the portion, forming a detail on the surface (see paragraph 2 of Baril).

As to claim 17, the method step of wherein the detail is etched into the surface so as to be inset therein would have been an obvious result of using the apparatus of Powers as modified by Smith and Baril.

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As to claim 18, the method step of wherein the portion of the surface is removed to form the detail in relief would have been an obvious result of using the apparatus of Powers as modified by Smith and Baril.

As to claim 19, the method step of wherein the detail comprises at least one of a pattern and an angled shaping would have been an obvious result of using the apparatus of Powers as modified by Smith and Baril.

As to claim 20, Powers teaches angled shaping comprises tapered side portions. However, the modified reference is silent as to forming an earplug with a conical, frustoconical, or pyramidal shape. Conical earplugs are well known and commonly used in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have angled the water stream in order to produce conical earplugs because these shapes are well known and commonly used for earplugs to more closely resemble the shape of the ear canal. Also, a mere change in shape does not patentably distinguish the invention over the prior art (See *In re Dailey* 357 F.2d 669, 149 USPQ 47 (CCPA 1966)). Furthermore, it appears as though the modified device of Powers would perform equally well if cylindrical/conical patterns were cut as opposed to rectangular, trapezoidal, etc. patterns.

As to claim 21, Powers teaches wherein said contacting the sheet comprises engaging the sheet with the water stream at an angle to a longitudinal axis of the earplug and wherein said cutting the sheet and said severing the earplug comprises tracing an end of the earplug on a top surface of the sheet while maintaining the angle of the water stream relative to the longitudinal axis to form the earplug including a conical or pyramidal shape (see figs. 2-7).

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As to claim 22, Powers teaches a method of forming an earplug, comprising: forming a sheet of resilient, compressible full-recovery foam material (fig.1, 10, see also col.1, lines 64-67 and col.2, lines 42-46), so as to include a thickness substantially equal to a longitudinal length of the earplug (see figs. 2-7). Powers however lacks the detailed step of water-jet cut, i.e., conveying the foam sheet to a water jet cutting assembly; depositing the foam sheet on a slat; pressurizing water in the water jet cutting assembly with a pump; delivering the pressurized water through a jewel in a high pressure stream; contacting the foam sheet with the high pressure stream in a direction generally perpendicular to the sheet; and maneuvering the high pressure stream to cut the foam sheet, shape-to delimit elongated sides of the earplug extending substantially along the longitudinal length of the earplug, and to sever the earplug from the foam sheet. However, Smith discloses a method of cutting an earplug using a variety of conventional cutting devices including water jet (col.5 lines 60-63). Therefore, it would have been obvious to one of ordinary skill in the art to modify Powers to cut ear plugs using water-jet because it is well known in the art to cut earplugs using water jet as taught by Smith. Furthermore, claimed detailed water-jet cutting steps are well known in the art. Baril teaches water jet cutting as a processing tool that uses high pressure water for cutting many soft and semi-rigid materials like paper, plastic, and foam (further suggesting process can be applied for making earplug, which are conventionally made from resilient foam material). Baril further teaches high-pressure water (50,000-60,000 psi) passes through a jeweled orifice that ranges from 0.003 to 0.013 inches and the flow enters a mixing tube or nozzle that ranges in size from 0.015 inches through 0.05 inches in diameter. Therefore, it would have been obvious to one of ordinary skill in art to incorporate the specific water-jet cutting steps to the method step of Powers as modified by Smith in order to

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provide extremely accurate cuts with a high degree of repeatability over a wide range of materials and shapes as taught by Baril (see Cut Smart to Baril, paragraph 5).

The modified reference is silent as to maneuvering in substantially circular displacement and traversing circular patterns on the sheet to sever the earplug from the sheet, making the earplug being substantially cylindrical in shape. However, cylindrical earplugs are well known and commonly used in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to traverse circular patterns on the sheet of the modified Powers earplug because it would have provided a means of producing a commonly used cylindrical earplug with a well known and commonly used cutting technique (i.e., water jet assembly), yielding predictable results that do not patentably distinguish an invention over the prior art. Also, a mere change in shape without a change in function does not patentably distinguish the invention over the prior art (See *In re Dailey* 357 F.2d 669, 149 USPQ 47 (CCPA 1966)). Furthermore, it appears as though the modified device of Powers would perform equally well if circular patterns would cut as opposed to rectangular, trapezoidal, etc. patterns.

As to claim 23, Powers as modified teaches wherein said contacting the sheet comprises engaging the sheet with the water stream at an angle to a longitudinal axis of the earplug and wherein said cutting the sheet and said severing the earplug comprises tracing an end of the earplug on a top surface of the sheet while maintaining the angle of the water stream relative to the longitudinal axis. However, the modified reference is silent as to forming an earplug with a conical shape. As discussed above, cylindrical and conical earplugs are well known and commonly used in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have angled the water stream in order to produce

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conical earplugs because these shapes are well known and commonly used for earplugs to more closely resemble the shape of the ear canal. Also, a mere change in shape does not patentably distinguish the invention over the prior art (See *In re Dailey* 357 F.2d 669, 149 USPQ 47 (CCPA 1966)). Furthermore, it appears as though the modified device of Powers would perform equally well if cylindrical/conical patterns were cut as opposed to rectangular, trapezoidal, etc. patterns.

Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Powers, Smith et al., and Baril, as applied to claim 1 above, and further in view of Williams US Patent No. 5,573,015.

As to claim 11, Powers as modified lacks piercing the sheet with the high-pressure water stream forming a hole therein then said cutting the sheet around the hole such that the severed earplug includes the hole. However, earplugs with holes extending along a longitudinal axis of the earplug entirely though the earplug and a stem being inserted in the hole is well known in the art. Williams teaches earplugs in figures 1-8 with core 12 inherently situated inside a channel or hole with stiffer material, i.e. semi-rigid in order that it can provide structural rigidity for the earplug (see col.3 lines 29-38). Therefore, it would have been obvious to one of ordinary skills in the art at the time of the invention to modify the earplug of Powers to include a hole as taught by Williams in order to provide rigidity to the earplug.

As to claim 12, Powers as modified teaches piercing the severed earplug with the high pressure water stream forming a hole therein, said piercing occurring after said severing (see col.3 lines 29-38 of Williams).

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As to claim 13, Powers as modified teaches wherein the hole is formed extending along a longitudinal axis of the earplug entirely through the earplug (see col.3 lines 29-38 of Williams).

As to claim 14, Powers as modified teaches inserting an item in the hole and bonding the item to the earplug at the hole (Smith in view of Baril and as modified by Williams teaches structures to perform the method steps cited for claim 14, therefore the method step would have been obvious result of using the apparatus of Smith as modified by Baril and as further modified by Williams).

As to claim 15, Powers as modified teaches wherein the item comprises at least one of a stem, a metal detectable insert, or an end of a cord (Smith in view of Baril and as modified by Williams teaches structures to perform the method steps cited for claim 15, therefore the method step would have been obvious result of using the apparatus of Smith as modified by Baril and as further modified by Williams).

Response to Arguments

Applicant's arguments, filed 6/15/2009, have been fully considered but are not persuasive.

Applicant's sole argument is that the combination of references do not teach cutting of circular patterns to form a cylindrical earplug as claimed, and that one would not modify the references because Powers teaches that the trapezoidal shapes allow for virtually no waste. However, as discussed in the previous office action, while examiner acknowledges that Powers discloses that circular patterns are undesirable because they produce waste, circular patterns are

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clearly disclosed in Powers (through the discussion of the waste produced by circular patterns). Depending on the desired shape of earplug (rectangular, cylindrical, conical, trapezoidal, etc.), one of ordinary skill in the art would have found it obvious to cut any desired pattern on the sheet, including circular patterns. Even though circular patterns would produce more waste material, there is nothing preventing a user from doing so with the modified Powers method as a matter of personal preference for producing an earplug with a well known and commonly used shape. Waste could be minimized (albeit not “virtually zero”) by tangentially cutting the circular shapes as well. Additionally, the references teach that the same foam material can be cut with the water jet technique. Cutting circular patterns on the material sheet of Powers would thus involve using a well known technique to produce a well known device with predictable results that do not patentably distinguish an invention over the prior art of record. It is clear that the only difference between the instant invention and the prior art is the pattern shape cut on Power's material, but without a critical teaching and/or showing of unexpected results from such circular traversing, the instant invention is not considered patentably distinguishable over the prior art.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KRISTEN C. MATTER whose telephone number is (571)272-5270. The examiner can normally be reached on Monday - Friday 9-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine Yu can be reached on (571) 272-4835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kristen C. Matter/
Examiner, Art Unit 3771

/Justine R Yu/
Supervisory Patent Examiner, Art Unit 3771

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